SERVICE MANUAL
Level 1&2

NOKIA 5230

RM-588 / RM-593 / RM-594 / RM-629

Transceiver characteristics

Band:
- EGSM 850/900/1800/1900
- WCDMA 900/2100 (RM-588)
- WCDMA 850/1700-2100 (RM-593)
- WCDMA 850/1900 (RM-594)
- WCDMA 850/2100 (RM-629)

Display:
nHD 3.2" TFT, up to 16 million colours (640x360 pixel resolution)
active area 39.6 mm x 70.4 mm
16:9 aspect ratio

Camera:
2.0 Mpix (1600 x 1200), CMOS
3x digital zoom

Operating System:
Symbian OS ver. 9.4 Series60 5th Edition (5.0)

Connections:
- Cellular radio: 3GPP GSM+(E)GPRS+WCDMA+HSDPA
- USB 2.0 (micro USB), Bluetooth wireless technology 2.0 + EDR + A2DP + AVRCP
- 3.5mm AV connector

Talk time	Standby
GSM: Up to 7 h **WCDMA:** Up to 4 h 18 ms	**GSM:** Up to 438 h **WCDMA:** Up to 458 h

Note: Talk times are dependant on network parameter settings.

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CHANGE HISTORY

Status	Version No.	Date	Comments
Approved	1.0	14.9.2009	First approved version
Approved	2.0	23.9.2009	Variant info updated
Approved	3.0	11.1.2010	Variant info, Exploded view and disassembly sequence updated
Approved	4.0	22.3.2010	Exploded view updated
Approved	5.0	16.4.2010	Exploded view updated

The purpose of this document is to help NOKIA service levels 1 and 2 workshop technicians to carry out service to NOKIA products. This Service Manual is to be used only by authorized NOKIA service suppliers, and the content of it is confidential. Please note that NOKIA provides also other guidance documents (e.g. Service Bulletins) for service suppliers, follow these regularly and comply with the given instructions.

While every endeavor has been made to ensure the accuracy of this document, some errors may exist. If you find any errors or if you have further suggestions, please notify NOKIA using the address below:

Nokia Care Academy
mailto:Service.Manuals@nokia.com

Please keep in mind also that this documentation is continuously being updated and modified, so watch always out for the newest version.

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1. COPYRIGHT

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The availability of particular products may vary by region.

IMPORTANT

This document is intended for use by qualified service personnel only.

2. WARNINGS AND CAUTIONS

Please refer to the phone's user guide for instructions relating to operation, care and maintenance including important safety information. Note also the following:

2.1 Warnings

1. CARE MUST BE TAKEN ON INSTALLATION IN VEHICLES FITTED WITH ELECTRONIC ENGINE MANAGEMENT SYSTEMS AND ANTI–SKID BRAKING SYSTEMS. UNDER CERTAIN FAULT CONDITIONS, EMITTED RF ENERGY CAN AFFECT THEIR OPERATION. IF NECESSARY, CONSULT THE VEHICLE DEALER/MANUFACTURER TO DETERMINE THE IMMUNITY OF VEHICLE ELECTRONIC SYSTEMS TO RF ENERGY.

2. THE HANDPORTABLE TELEPHONE MUST NOT BE OPERATED IN AREAS LIKELY TO CONTAIN POTENTIALLY EXPLOSIVE ATMOSPHERES, EG PETROL STATIONS (SERVICE STATIONS), BLASTING AREAS ETC.

3. OPERATION OF ANY RADIO TRANSMITTING EQUIPMENT, INCLUDING CELLULAR TELEPHONES, MAY INTERFERE WITH THE FUNCTIONALITY OF INADEQUATELY PROTECTED MEDICAL DEVICES. CONSULT A PHYSICIAN OR THE MANUFACTURER OF THE MEDICAL DEVICE IF YOU HAVE ANY QUESTIONS. OTHER ELECTRONIC EQUIPMENT MAY ALSO BE SUBJECT TO INTERFERENCE.

2.2 Cautions

1. Servicing and alignment must be undertaken by qualified personnel only.

2. Ensure all work is carried out at an anti–static workstation and that an anti–static wrist strap is worn.

3. Use only approved components as specified in the parts list.

4. Ensure all components, modules screws and insulators are correctly re–fitted after servicing and alignment.

5. Ensure all cables and wires are repositioned correctly

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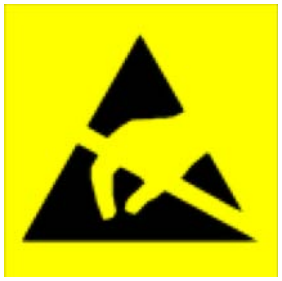
3. ESD PROTECTION



Nokia requires that service points have sufficient ESD protection (against static electricity) when servicing the phone.

Any product of which the covers are removed must be handled with ESD protection. The SIM card can be replaced without ESD protection if the product is otherwise ready for use.

To replace the covers ESD protection must be applied.

All electronic parts of the product are susceptible to ESD. Resistors, too, can be damaged by static electricity discharge.

All ESD sensitive parts must be packed in metallized protective bags during shipping and handling outside any ESD Protected Area (EPA).

Every repair action involving opening the product or handling the product components must be done under ESD protection.

ESD protected spare part packages MUST NOT be opened/closed out of an ESD Protected Area.

For more information and local requirements about ESD protection and ESD Protected Area, contact your local Nokia After Market Services representative.

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4. CARE AND MAINTENANCE

This product is of superior design and craftsmanship and should be treated with care. The suggestions below will help you to fulfil any warranty obligations and to enjoy this product for many years.

- Keep the phone and all its parts and accessories out of the reach of small children.
- Keep the phone dry. Precipitation, humidity and all types of liquids or moisture can contain minerals that will corrode electronic circuits.
- Do not use or store the phone in dusty, dirty areas. Its moving parts can be damaged.
- Do not store the phone in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the phone in cold areas. When it warms up (to its normal temperature), moisture can form inside, which may damage electronic circuit boards.
- Do not drop, knock or shake the phone. Rough handling can break internal circuit boards.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the phone.
- Do not paint the phone. Paint can clog the moving parts and prevent proper operation.
- Use only the supplied or an approved replacement antenna. Unauthorised antennas, modifications or attachments could damage the phone and may violate regulations governing radio devices.

All of the above suggestions apply equally to the product, battery, charger or any accessory.

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5. BATTERY INFORMATION

Note: A new battery's full performance is achieved only after two or three complete charge and discharge cycles! The battery can be charged and discharged hundreds of times but it will eventually wear out.

When the operating time (talk-time and standby time) is noticeably shorter than normal, it is time to buy a new battery. Use only batteries approved by the phone manufacturer and recharge the battery only with the chargers approved by the manufacturer.

Unplug the charger when not in use. Do not leave the battery connected to a charger for longer than a week, since overcharging may shorten its lifetime.

If left unused a fully charged battery will discharge itself over time Temperature extremes can affect the ability of your battery to charge.

For good operation times with Ni-Cd/NiMh batteries, discharge the battery from time to time by leaving the product switched on until it turns itself off (or by using the battery discharge facility of any approved accessory available for the product).

Do not attempt to discharge the battery by any other means Use the battery only for its intended purpose.

Never use any charger or battery which is damaged.

Do not short-circuit the battery. Accidental short-circuiting can occur when a metallic object (coin, clip or pen) causes direct connection of the + and - terminals of the battery (metal strips on the battery) for example when you carry a spare battery in your pocket or purse. Shortcircuiting the terminals may damage the battery or the connecting object.

Leaving the battery in hot or cold places, such as in a closed car in summer or winter conditions, will reduce the capacity and lifetime of the battery. Always try to keep the battery between 15°C and 25°C (59°F and 77°F).

A phone with a hot or cold battery may temporarily not work, even when the battery is fully charged. Batteries' performance is particularly limited in temperatures well below freezing.

Do not dispose batteries in a fire! Dispose of batteries according to local regulations (e.g. recycling).

Do not dispose as household waste.

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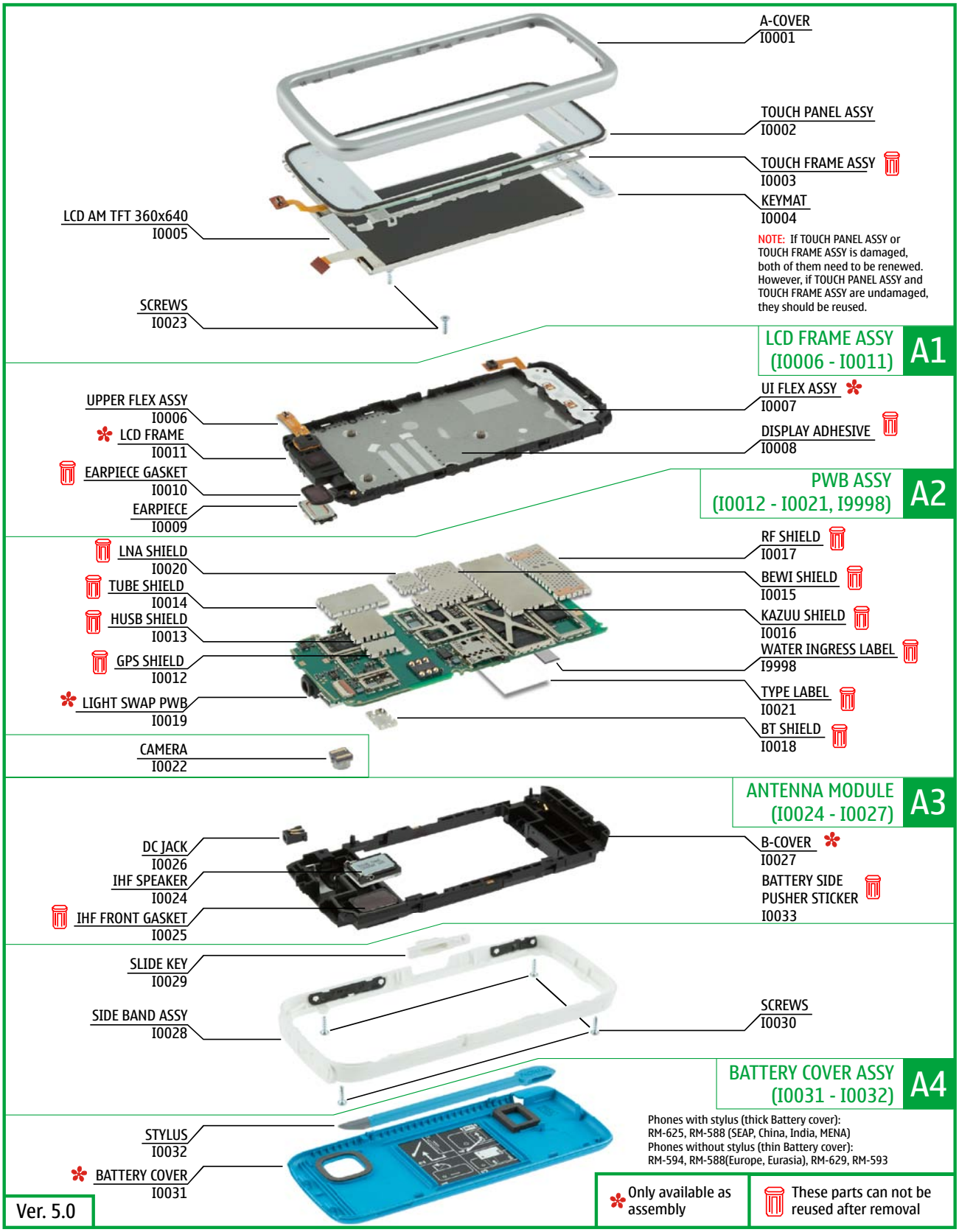
6. EXPLODED VIEW



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7. SERVICE DEVICES

FLS-5 Flash Device

CA-101 Service Cable

AC-4 Travel Charger

BL-5J Battery

SS-195 Display removal tool

SS-88 Camera removal tool

NMP standard toolkit (v2)
For more information, refer to the Service Bulletin (SB-011) on NOKIA Online. Supplier or manufacturer contacts for tool re-order can be found in “Recommended service equipment” document on NOKIA Online.

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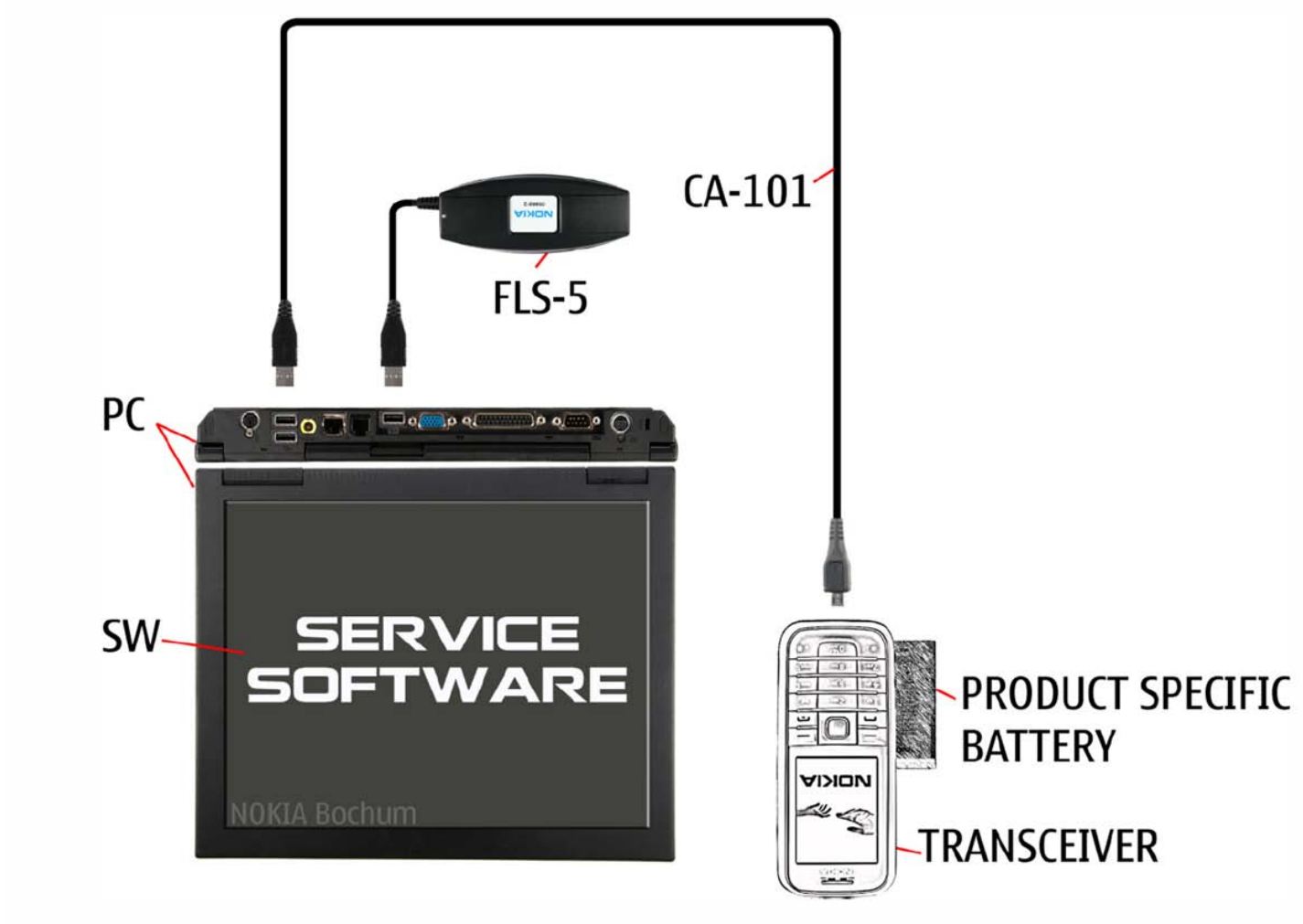
8. SW-UPDATE

Flash concept - (Point of Sales)

To use the FLS-5 Flash Dongle, follow the user guide inside the sales package.
Please check always for the latest version of flash software, wich is available on Nokia Online.



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9. DISASSEMBLY INSTRUCTIONS

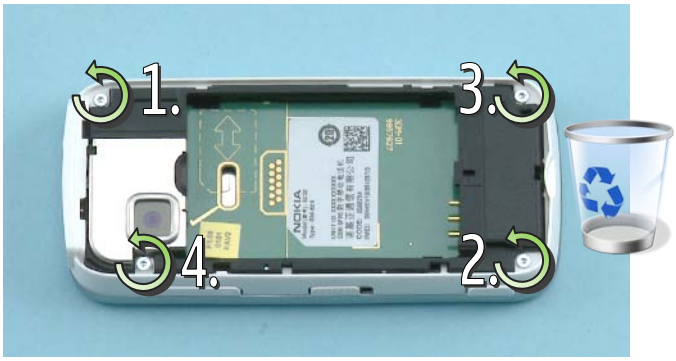
1) Nokia 5230 disassembly.

2) You must use the Nokia Standard Toolkit version 2. You will also need the SS-88 camera removal tool, SS-195 display removal tool and a DC plug.

3) First remove the stylus.

4) Use the opening notch to release the BATTERY COVER.

5) Remove the BATTERY COVER. If there is a battery inserted, remove it also.



6) Unscrew the four TORX+ size 5 screws in the order shown. Remove them with the tweezers.

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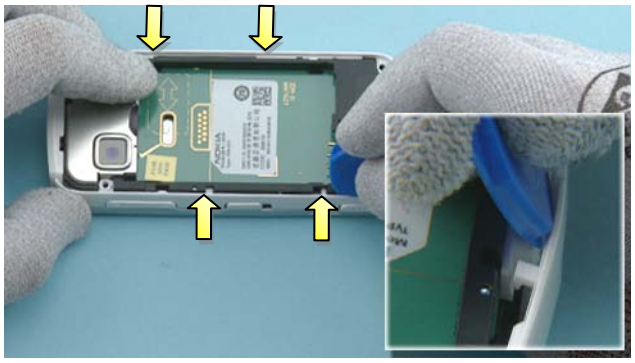
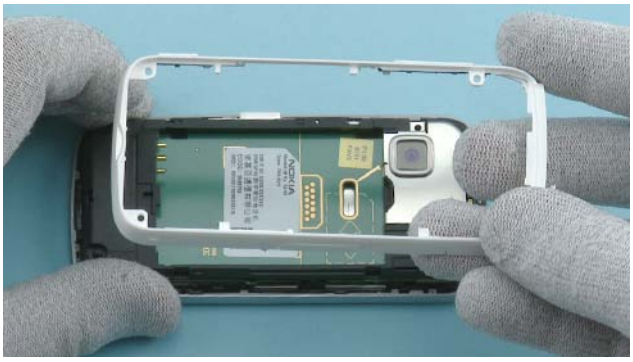
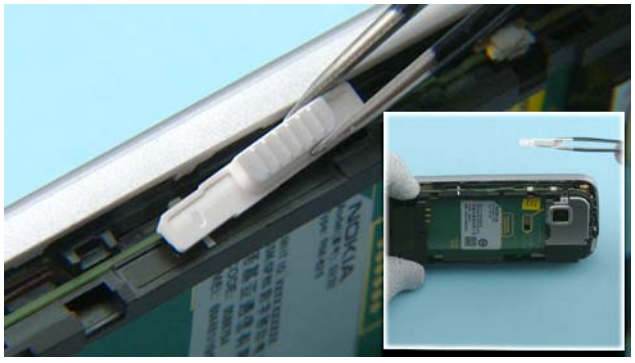


7) Release the snaps of the SIDE BAND ASSY with the SRT-6.

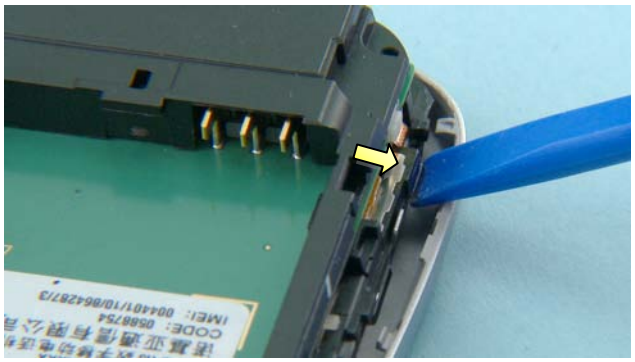


8) Release also the snaps on the other side with the SRT-6. Remove the SIDE BAND ASSY.



9) Remove the SLIDE KEY with the tweezers.

10) To remove the A-COVER, first release the clip from the bottom corner with the SS-93.



11) Continue to the bottom side and release two clips holding the A-COVER.

12) Then release the remaining clips on both sides of the phone.

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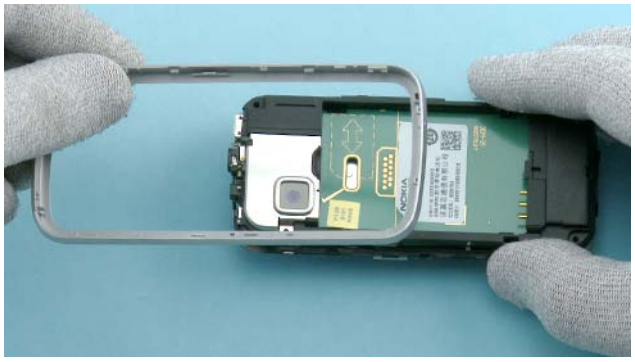
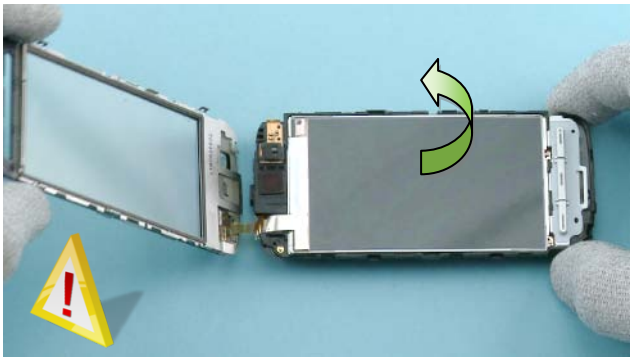
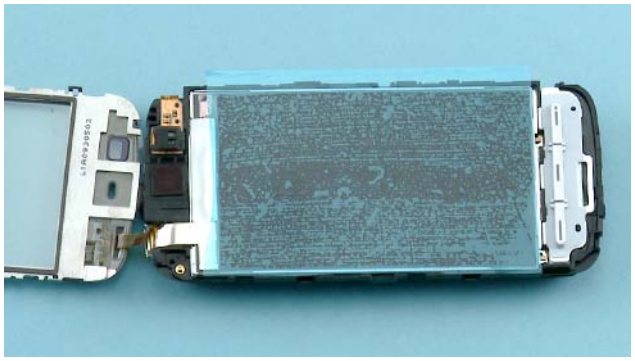


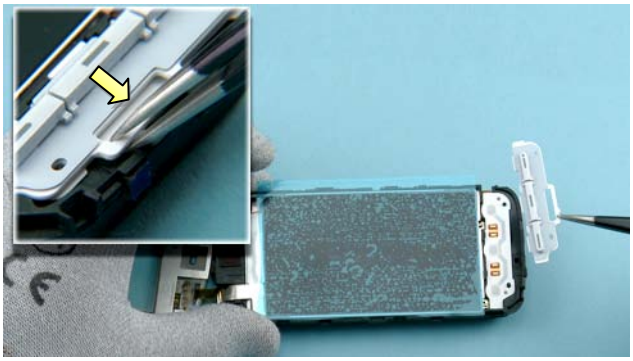
13) The A-COVER can now be separated.



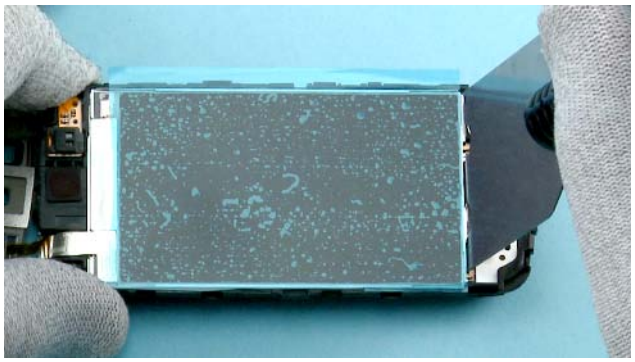
14) Turn over the TOUCH PANEL ASSY and the TOUCH FRAME ASSY as shown. Be careful not to break the flex!



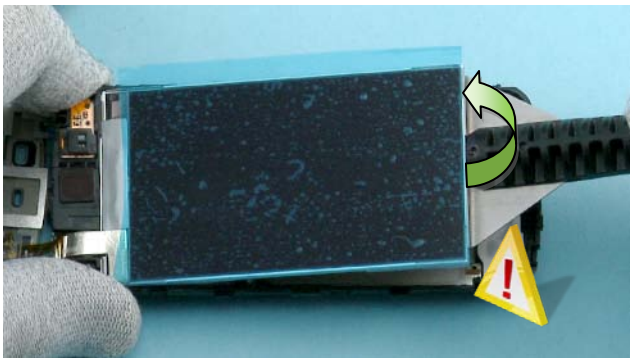
15) Protect the LCD with a protective film.



16) Release the KEYMAT with the tweezers.



17) Insert the SS-195 display removal tool between the LCD and the LCD FRAME ASSY. Carefully slide the tool underneath the LCD to loosen the adhesive.



18) Lift up the bottom side of the LCD and then carefully lay it down. Be careful not to break the flex!

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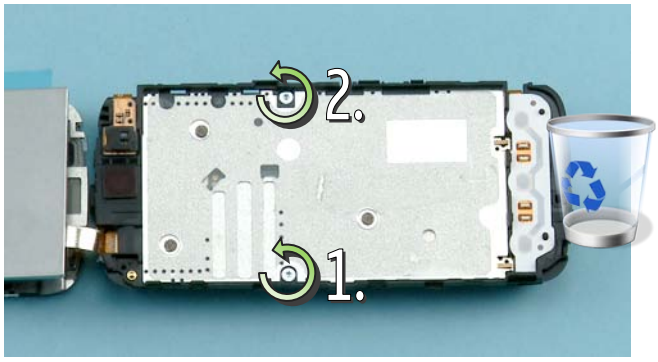
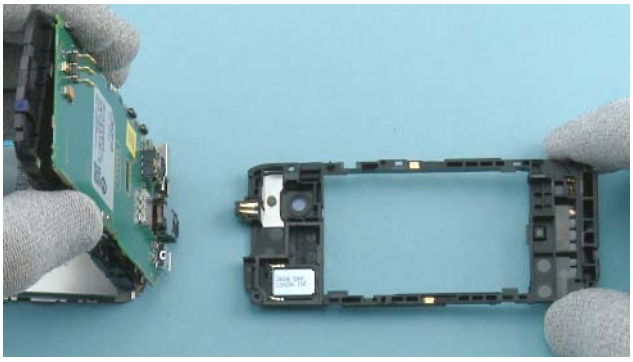
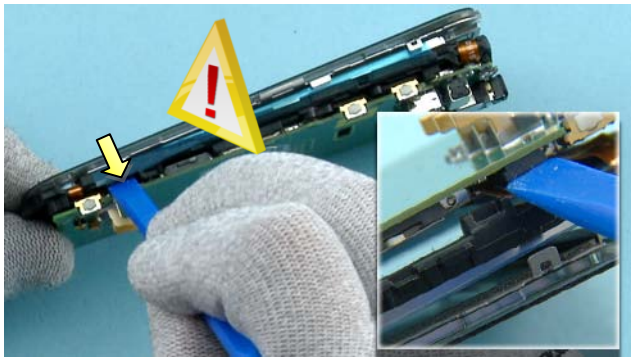


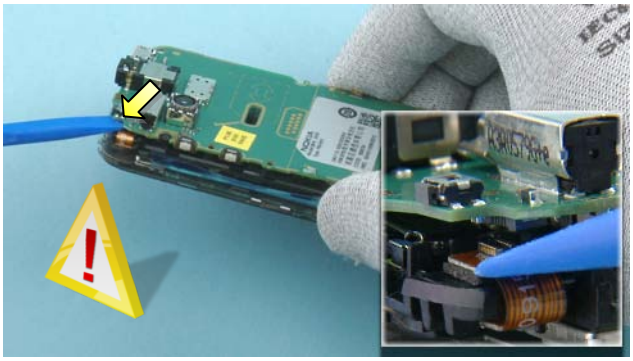
19) Unscrew the two TORX+ size 5 screws in the order shown.



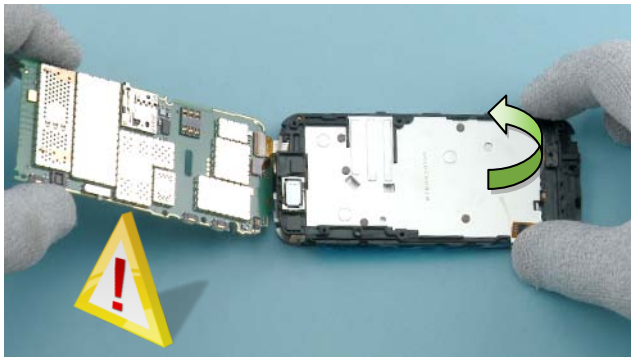
20) Lift up the LCD FRAME ASSY and the ENGINE BOARD. Then remove the B-COVER.



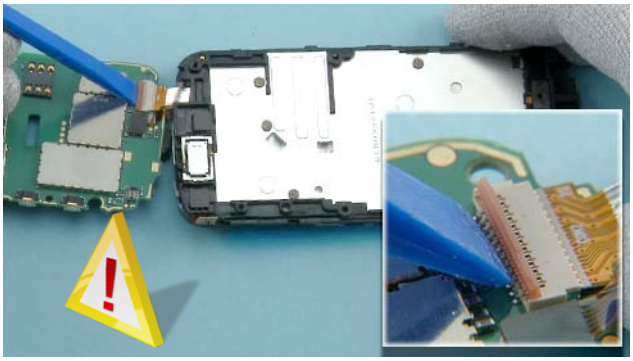
21) Use the SS-93 to open the LCD FRAME ASSY connector. While opening the connector, be careful not to damage the connector or any nearby components!



22) Also, open the UPPER FLEX ASSY connector on the top side of the phone with the SS-93. Be careful not to damage the components nearby!



23) Turn over the ENGINE BOARD. Be careful not to break the flex!



24) Open the locking mechanism of the LCD connector. Be careful not to damage the components nearby!

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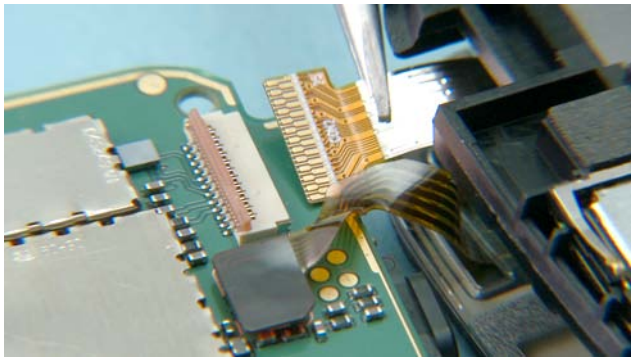
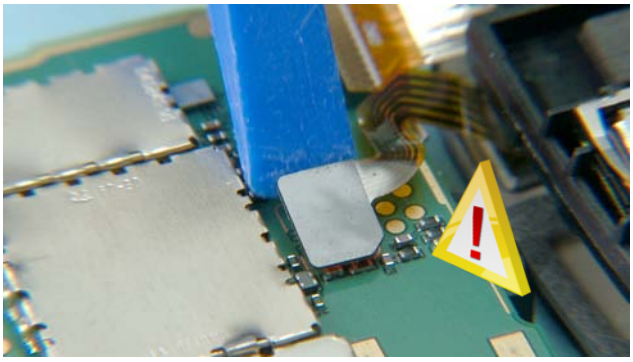
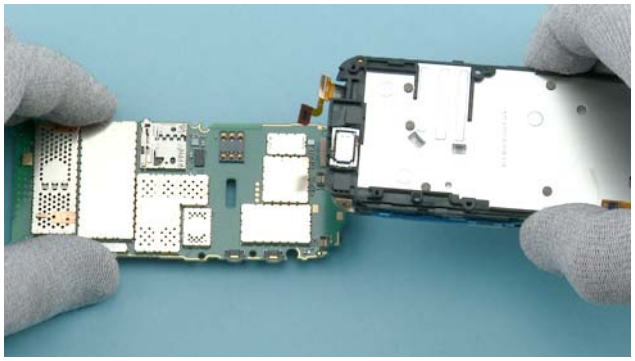


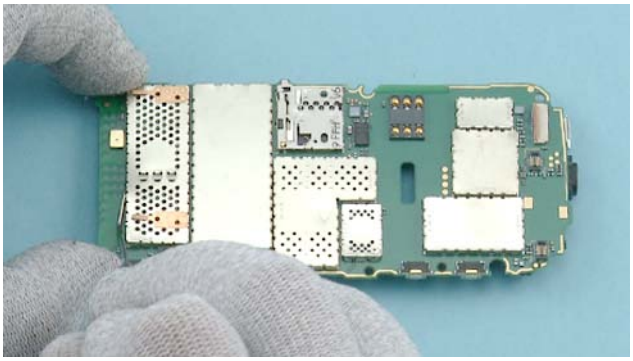
25) Release the LCD connector with the tweezers.



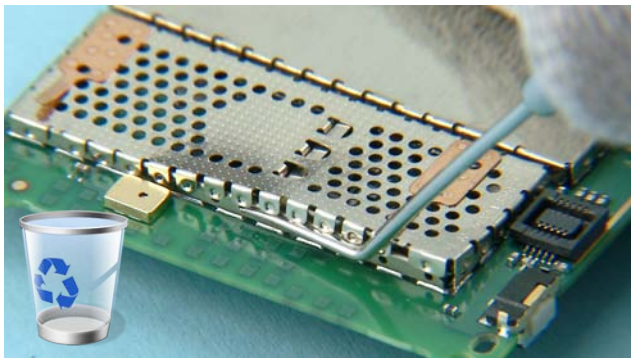
26) Open the TOUCH PANEL connector with the SS-93. Be careful not to damage the connector - or any nearby components!



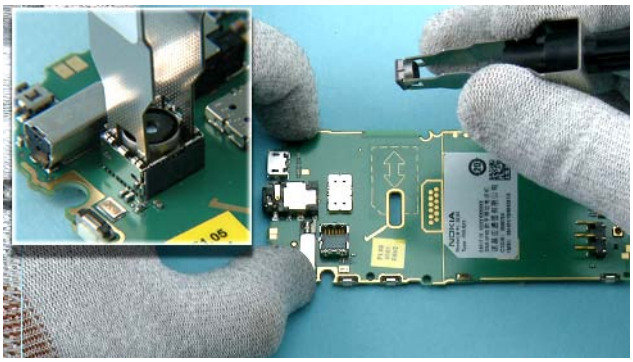
27) The engine board can now be separated.



28) Use the dental tool to release all these lids. Be aware of the sharp point of the dental tool - be careful not to injure yourself!



29) Remove the lids with the tweezers. Do not use them again. Discard them.



30) Use the camera removal tool SS-88 to lift up the camera.

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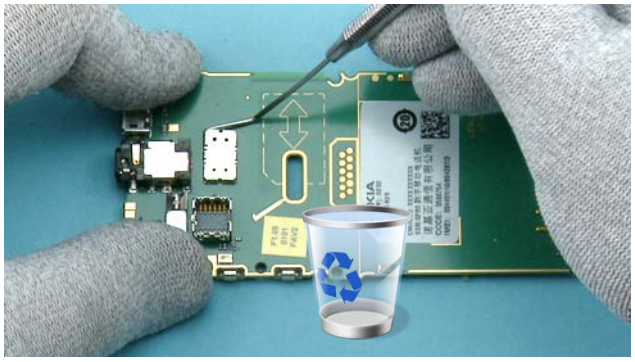
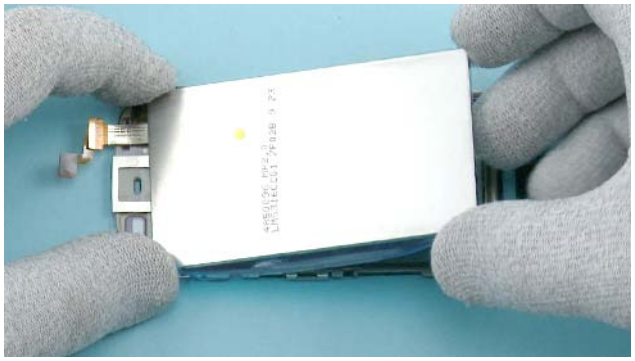
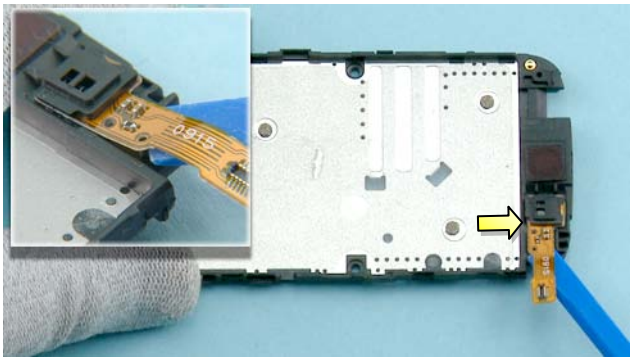


31) Release the remaining lid with the dental tool. Do not use it again. Discard it.

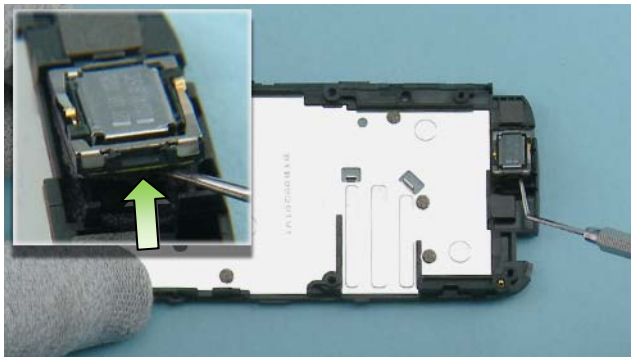
32) Remove the LCD FRAME ASSY.



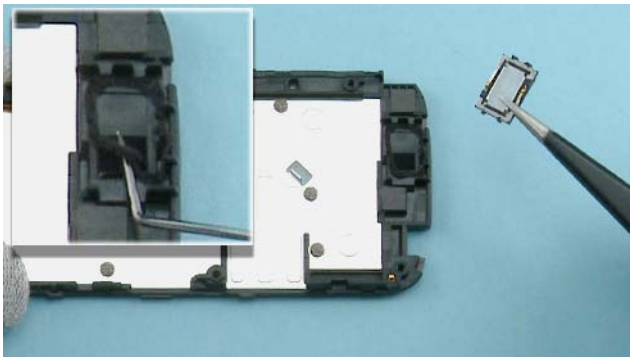
33) Remove also the LCD.



34) Use the SS-93 to detach the UPPER FLEX ASSY. Remove it with the tweezers.



35) Lever out the EAR PIECE with the dental tool.



36) Remove it with the tweezers. Remove also the remains of the GASKET from the EAR PIECE.

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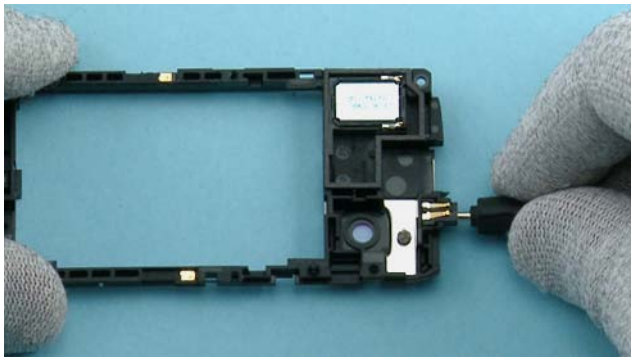
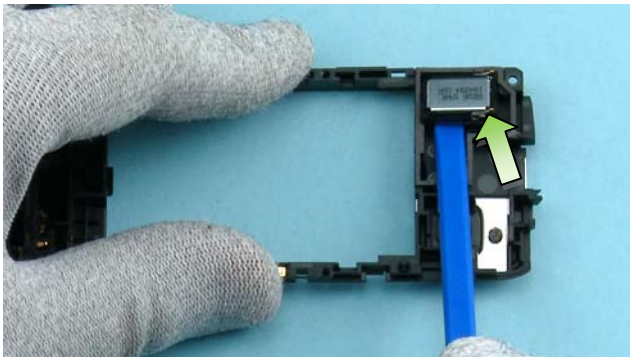
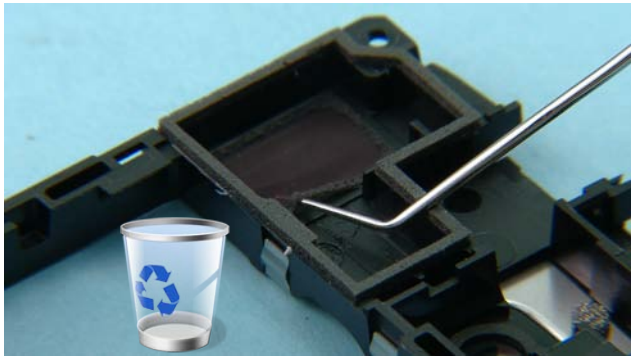


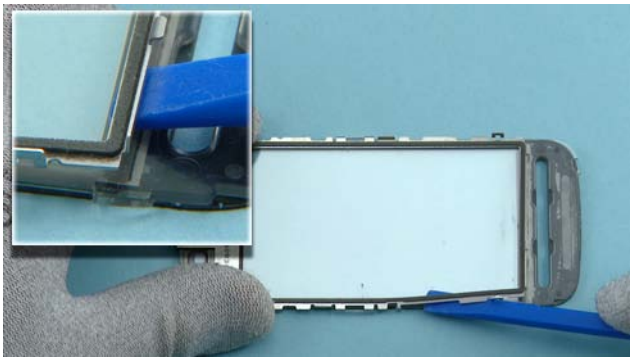
37) Use the DC plug to lift up the DC JACK.



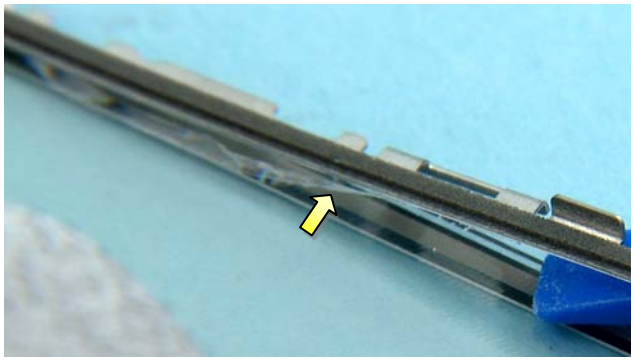
38) Lift up the IHF SPEAKER with the SS-93 and remove it using tweezers. Remains of the GASKET have to be removed from the IHF SPEAKER.



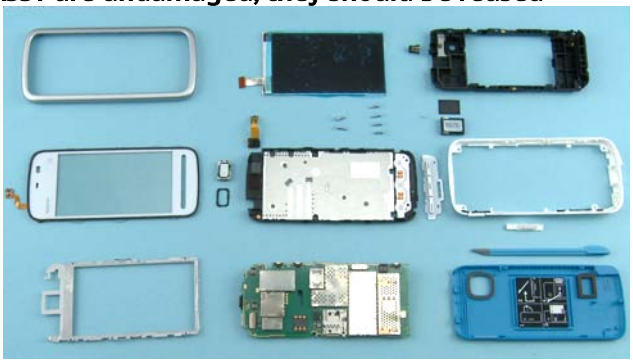
39) Peel out the corner of the IHF SPEAKER GASKET with the dental tool and remove it with tweezers. Do not use it again. Discard it.



40) Use the SS-93 to detach the TOUCH FRAME ASSY from the TOUCH PANEL ASSY. TOUCH FRAME ASSY and TOUCH PANEL ASSY can now be separated. **Note: If TOUCH PANEL ASSY or TOUCH FRAME ASSY is damaged, both of them need to be renewed. However, If TOUCH PANEL ASSY and TOUCH FRAME ASSY are undamaged, they should be reused**



41) Also, make sure the adhesive which is on top of the TOUCH PANEL ASSY is removed while detaching the TOUCH FRAME ASSY.



42) Nokia 5230 disassembly is now complete.

-END OF DISASSEMBLY-

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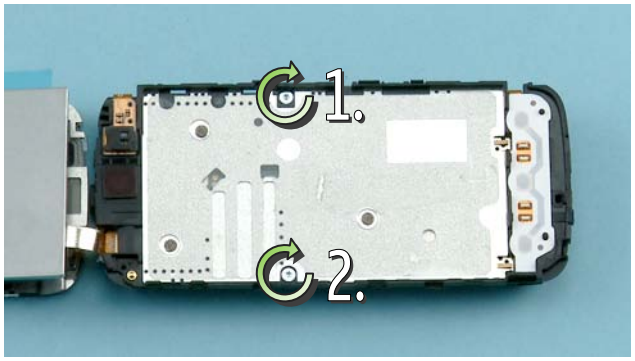
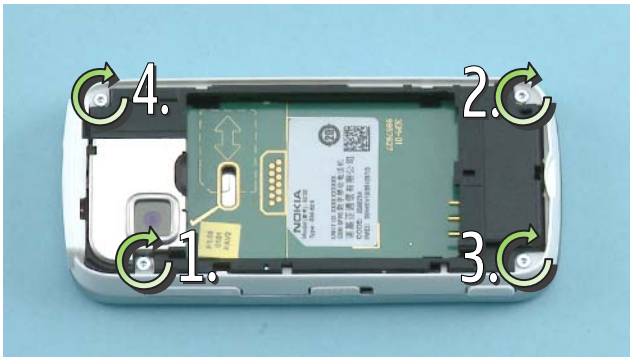
10. ASSEMBLY HINTS



1) Tighten the 2 screws to the torque of 16 Ncm in the order shown.



2) Tighten the screws to the torque of 17 Ncm in the order shown.

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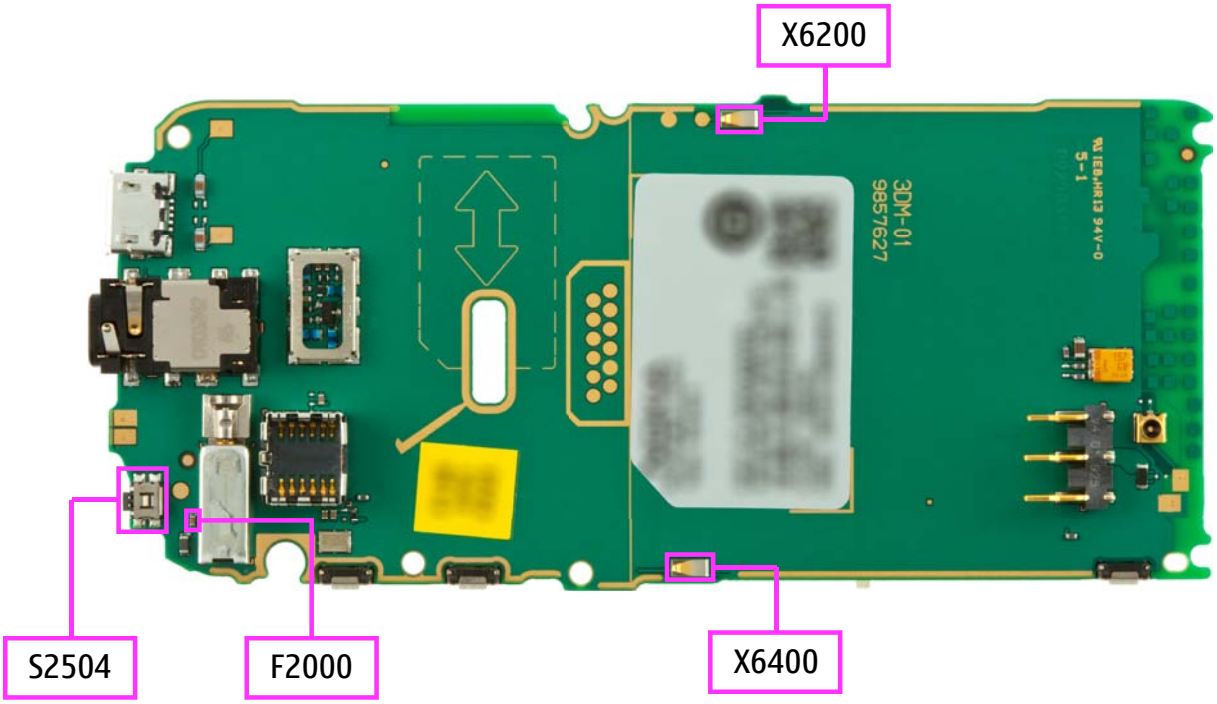
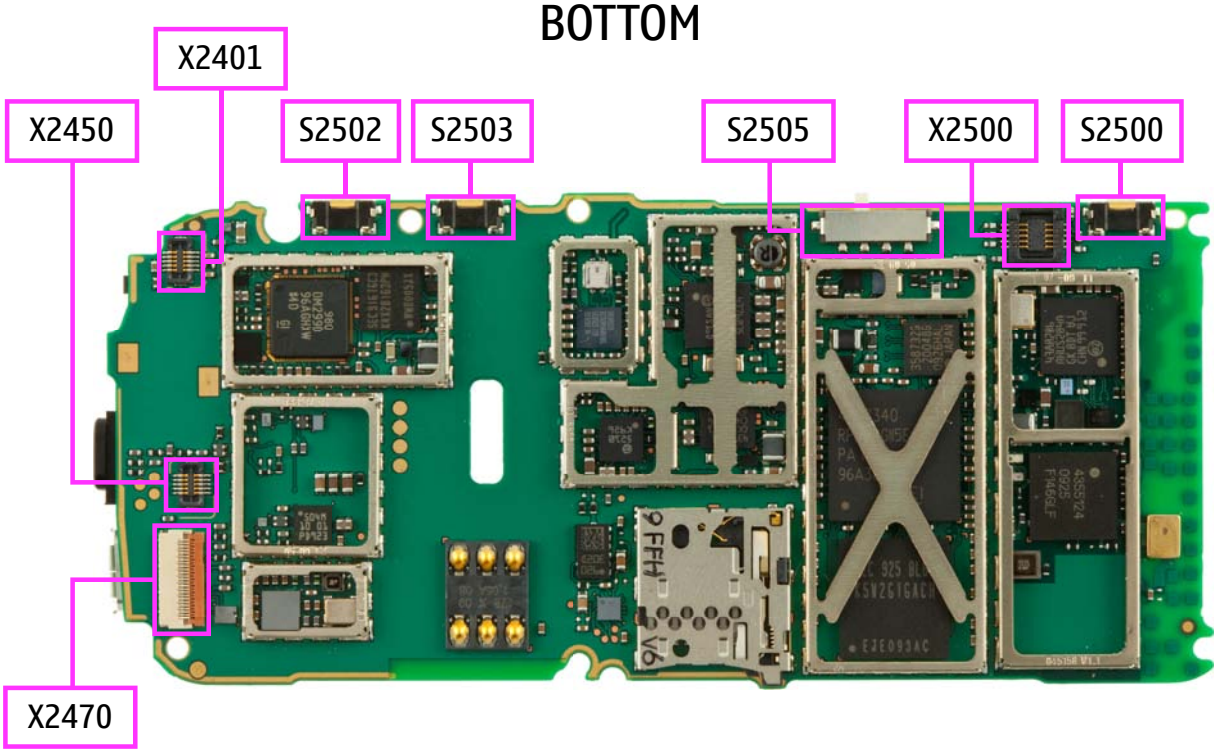
11. SOLDER COMPONENTS

TOP



BOTTOM



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